

at least one laser diode module including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate; and

a heat pipe having a heat absorbing portion and a heat radiating portion, said heat absorbing portion of said heat pipe being thermally connected with said peltier device.

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A/ 3. (Once Amended) The optical transmission system according to Claim 2, further comprising a plurality of laser diode modules each including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate.

4. (Once Amended) The optical transmission system according to Claim 3, further comprising a plurality of heat pipes, each of said plurality of heat pipes being thermally connected with a respective one of said plurality of laser diode modules.

5. (Once Amended) A light source, comprising:

a plurality of laser diode modules each including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate;

a plurality of heat pipes each having a heat absorbing portion and a heat radiating portion, said heat absorbing portion being thermally connected with said peltier device, said plurality of heat pipes being thermally connected with said plurality of laser diode modules; and

a mounting portion having said plurality of laser diode modules mounted thereon, said mounting portion having holes configured to receive heat absorbing portions of said plurality of heat pipes along a lengthwise direction of said respective one of said plurality of laser

diode modules, said respective one of said plurality of laser diode modules being thermally connected with a respective one of said plurality of heat pipes received in said holes.

6. (Once Amended) The optical transmission system according to Claim 4, further comprising heat radiating fins provided on heat radiating portions of said plurality of heat pipes.

Sub 1327 7. (Once Amended) The optical transmission system according to Claim 2, wherein said heat pipe is cylindrical in shape.

Al end 8. (Once Amended) The optical transmission system according to Claim 7, wherein said laser diode module has a bottom portion that includes a curved surface portion, and wherein said heat pipe is tightly connected to said curved surface portion.

9. (Once Amended) A light source, comprising:

at least one laser diode module including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate;

a heat pipe having a heat absorbing portion and a heat radiating portion, said heat absorbing portion of said heat pipe being thermally connected with said peltier device;

a mounting portion having said laser diode module mounted thereon; and

a plurality of heat radiating fins provided on a bottom surface of said mounting

portion.

12. (Once Amended) An optical transmission system comprising a Raman amplifier comprising a light source configured to produce an optical signal, said light source including a plurality of densely placed laser diode modules, each of said plurality of densely placed laser diode modules having an output of at least 100 mW.

13. (Once Amended) An optical transmission system comprising a Raman amplifier comprising a light source configured to produce an optical signal, said light source including:

at least one laser diode module including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate; and

a heat pipe having a heat absorbing portion and a heat radiating portion, said heat absorbing portion of said heat pipe being thermally connected with said peltier device.

AZ 14. (Once Amended) An optical transmission system comprising a light source configured to produce an optical signal, said light source comprising:

a laser diode module including a laser diode chip, an optical component, and a peltier device, said laser diode chip and said optical component being supported by said peltier device;

a mounting portion having said peltier device mounted thereon such that said peltier device is thermally connected with said mounting portion; and

at least one heat pipe having a first portion extending within said mounting portion and a second portion extending from a side of said mounting portion, said heat pipe having an interior with a heat transfer fluid therein.

15. (Once Amended) The optical transmission system according to Claim 14, wherein said mounting portion is made of a metal.

16. (Once Amended) The optical transmission system according to Claim 14, further comprising a plurality of densely placed laser diode modules, each of said plurality of densely placed laser diode modules having an output of at least 100 mW.

17. (Once Amended) The optical transmission system according to Claim 14, further comprising a plurality of laser diode modules each including a metal substrate mounting a

laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate.

18. (Once Amended) The optical transmission system according to Claim 17, further comprising a plurality of heat pipes, each of said plurality of heat pipes being thermally connected with a respective one of said plurality of laser diode modules.

19. (Once Amended) A light source comprising:

AZ a plurality of laser diode modules each including a laser diode chip, an optical component, and a peltier device, said laser diode chip and said optical component being supported by said peltier device, each laser diode module including a metal substrate mounting said laser diode chip and said optical component, and said peltier device being thermally connected with said metal substrate;

a mounting portion having said peltier devices mounted thereon such that said peltier devices are thermally connected with said mounting portion; and

a plurality of heat pipes each having a heat absorbing portion extending within said mounting portion and a heat radiating portion extending from a side of said mounting portion, said plurality of heat pipes each having an interior with a heat transfer fluid therein, said plurality of heat pipes being thermally connected with said plurality of laser diode modules,

wherein said mounting portion has holes configured to receive heat absorbing portions of said plurality of heat pipes along a lengthwise direction of said respective one of said plurality of laser diode modules, said respective one of said plurality of laser diode modules being thermally connected with a respective one of said plurality of heat pipes received in said holes.

20. (Once Amended) The optical transmission system according to Claim 18, further comprising heat radiating fins provided on heat radiating portions of said plurality of heat pipes.

21. (Once Amended) The optical transmission system according to Claim 14, wherein said heat pipe is cylindrical in shape.

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end 22. (Once Amended) The optical transmission system according to Claim 21, wherein said laser diode module has a bottom portion that includes a curved surface portion, and wherein said heat pipe is tightly connected to said curved surface portion.

23. (Once Amended) A light source comprising:

a laser diode module including a laser diode chip, an optical component, and a peltier device, said laser diode chip and said optical component being supported by said peltier device;

a mounting portion having said peltier device mounted thereon such that said peltier device is thermally connected with said mounting portion;

at least one heat pipe having a first portion extending within said mounting portion and a second portion extending from a side of said mounting portion, said heat pipe having an interior with a heat transfer fluid therein; and

a plurality of heat radiating fins provided on a bottom surface of said mounting portion.
